

**LOSSLESS OPTICAL SPLITTER****Abstract of the Disclosure**

A system for processing an optical signal into a plurality of optical output signals includes a laser for generating an optical signal along an optical signal path.

- 5 An optical splitter receives the optical signal and includes an input optical fiber and a stepped, optical splitter circuit formed from a plurality of laser ion doped optical waveguides branching into a plurality of output optical signals. An optical pump source pumps an
- 10 optical pump signal through the stepped, optical splitter circuit and excites the erbium to distribute gain throughout the optical splitter.